

Nitrate in Drinking Water

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Nitrate is a chemical found in most fertilizers, manure and liquid waste discharged from septic tanks. Natural bacteria in soil can convert nitrogen into nitrate.

How can nitrate get into my well water?

Rain or irrigation water can carry nitrate down through the soil into groundwater. Your drinking water may contain nitrate if your well draws from this groundwater.

Why is nitrate in drinking water a problem?

Nitrate is an acute contaminant, which means a single exposure can affect a person's health.

How does nitrate affect health?

It can reduce the ability of red blood cells to carry oxygen. In most adults and children these red blood cells rapidly return to normal. However, in infants it can take much longer for the blood cells to return to normal. As a result, infants who drink water with high levels of nitrate (or eat foods made with nitrate-contaminated water) may develop a serious health condition due to the lack of oxygen. This condition is called methemoglobinemia or "blue baby syndrome." Some scientists think diarrhea can make this problem even worse.

How is nitrate in drinking water regulated?

Washington's drinking water quality standard for nitrate is 10 milligrams per liter, or 10 parts per million. State law requires public water systems to sample for many contaminants, including nitrate, on a regular basis. If you own a private well, you are responsible for testing your own water. At minimum, we recommend you test for nitrate at least once a year.

Signs of "blue baby syndrome"

An infant with moderate to serious "blue baby syndrome" may have a brownish-blue skin tone due to lack of oxygen. This condition may be hard to detect in infants with dark skin.

An infant with mild to moderate "blue baby syndrome" may have symptoms similar to a cold or other infection (fussy, tired, diarrhea or vomiting). While there is a simple blood test to see if an infant has "blue baby syndrome," doctors may not think to do this test for babies with mild to moderate symptoms.

What to do about "blue baby syndrome"

If your baby has a brownish-blue skin tone, take her to a hospital immediately. A medication called "methylene blue" will quickly return her blood to normal.



HELPING TO ENSURE SAFE AND RELIABLE DRINKING WATER

Preventing “blue baby syndrome”

The best way to prevent “blue baby syndrome” is to avoid giving your baby water that may be contaminated with nitrate. Infants less than 1-year-old should not drink water with nitrate levels in excess of 10 parts per million. Although boiling water kills bacteria, it will not remove chemicals such as nitrate. In fact, heat causes water to evaporate, so boiling actually increases the nitrate level.

Nitrate in water will not have a long-lasting effect on your baby. If your baby does not have any of the symptoms of “blue baby syndrome” you do not need to take him to the doctor.

Will breast-feeding give my infant “blue baby syndrome”?

Although nitrate has been found in breast milk, there are no confirmed reports of “blue baby syndrome” being caused by a nursing mother who drank water with an elevated nitrate level.

Can nitrate affect adults?

Although red blood cells in older children and adults quickly return to normal, some health conditions make people susceptible to health problems from nitrate. They include:

- Individuals who don’t have enough stomach acids.
- Individuals with an inherited lack of the enzyme that converts affected red blood cells back to normal (methemoglobin reductase).

Some studies have found an increased risk of spontaneous abortion or certain birth defects if the mother drank water high in nitrate. Women who are pregnant or trying to become pregnant should not consume water with high levels of nitrate.

How can I tell if my well water has nitrate?

Shallow wells, poorly sealed or constructed wells, and wells that draw from shallow aquifers are at greatest risk of nitrate contamination. The only way to know if your private well is contaminated with nitrate is to have it tested. Your county health department can tell you where you can get your water tested. Many certified labs in Washington perform these tests for \$20 to \$40 per test.

Nitrate levels can change over time, so you should test your well yearly.

Manure and septic-tank waste may also contain disease-causing bacteria and viruses. Therefore, we recommend you test your water for coliform bacteria at the same time you test for nitrate.

Where can I get more information?

If you get your water from a **public water system**, call your water utility or the Washington State Department of Health Office of Drinking Water at (800) 521-0323 or visit us online at <http://www.doh.wa.gov/ehp/dw/default.htm>

If you have a **private well**, call your local health department.

For a list of certified labs, visit the Washington State Department of Ecology online at <http://www.ecy.wa.gov/apps/eap/acclabs/labquery.asp> Under “Location,” select your state, city and county. Scroll down and click on “Show results.” Click on the name of a lab to see the tests it performs. Call the lab to make sure it is accredited for drinking water analysis of nitrate.

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